

What do you see?



Garage of FLW 630

Now, what do you see?



Closer view of Garage FLW 630

And, how about now?



Smoke pencil demonstrating the flow of air through the gap in Garage of Bld 630

Building Envelopes, Should They Really Breathe?

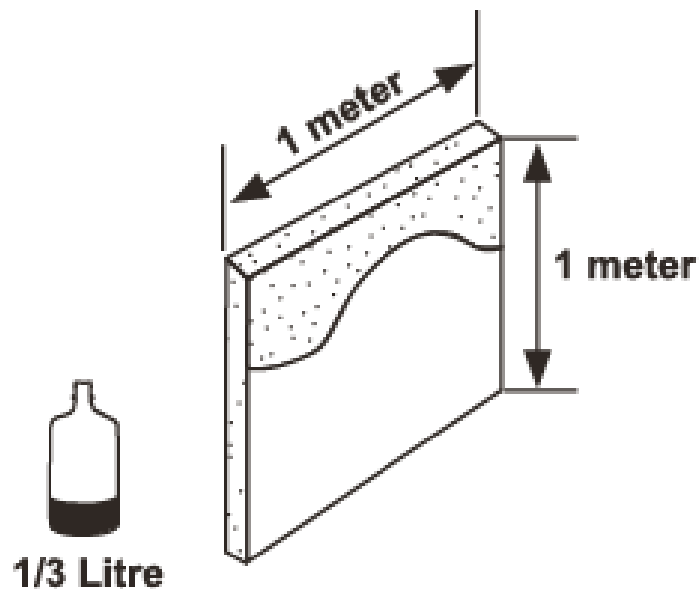
A question answered with a better understanding of:

- air leakage and its role in transporting moisture (unconditioned air) into the building enclosure
- the control of air leakage using air barrier systems.
- proper supply of outside air (better left for the HVAC guys)

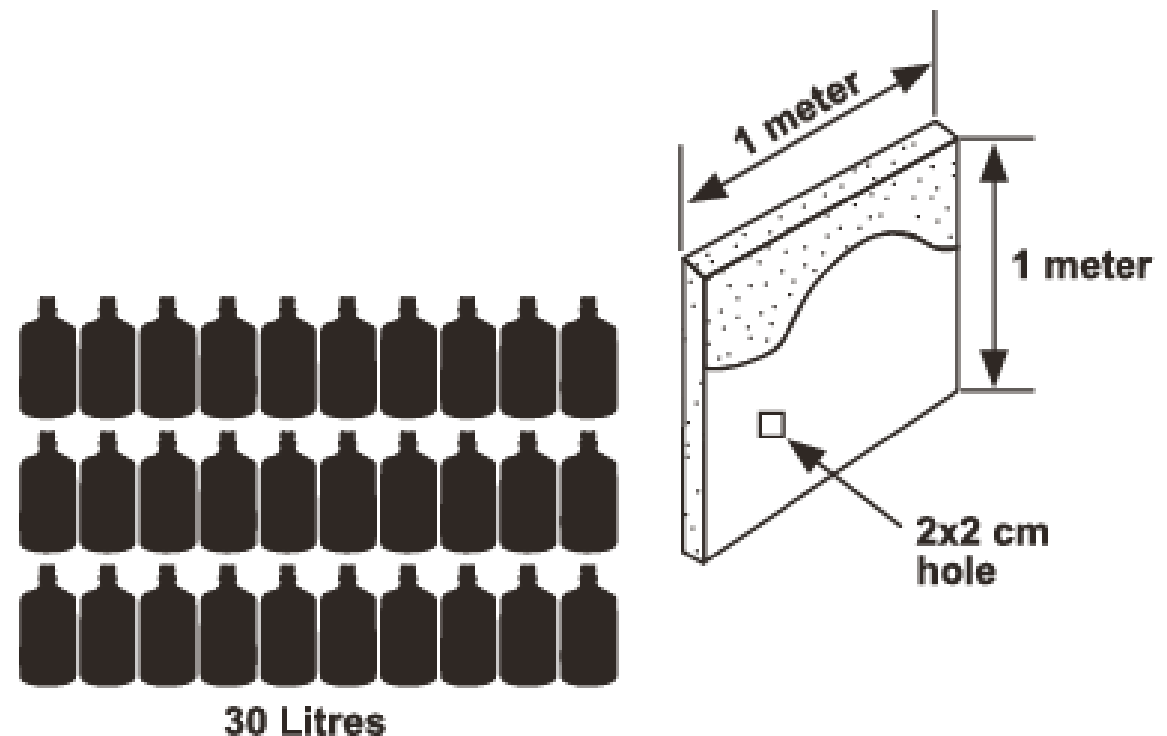


Is the Building Envelope really important?

**Transport via DIFFUSION
over 1m^2**



**Transport via AIR LEAKAGE
Through 4 cm^2**



- Moisture Transport Over One Heating System

Importance of the Building Envelope in an ECM

National Institute of Standards and Technology
(NIST) Ground Breaking Report 2004 found:

- A continuous air barrier systems can reduce air leakage by up to 83%

Importance of Building Envelope in an ECM

National Institute of Standards and Technology (NIST) Ground Breaking Report 2004 also concluded sealed Building Envelope would improve:

- Thermal comfort
- Operation of mechanical ventilation systems
- Indoor air quality
- Damage to the building envelope component

Importance of Including Building Envelope in an ECM

National Institute of Standards and Technology (NIST) Ground Breaking Report 2004 also concluded leaky buildings:

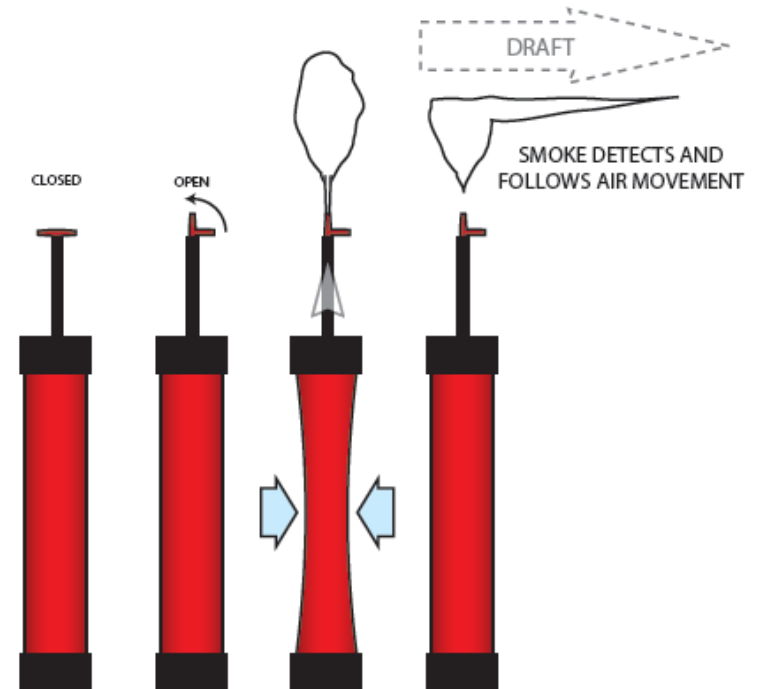
- Air leakage adds dramatically to the heating and cooling energy consumption of a building (up to 40%)

Finding the Problem -Smoke Pencil

Shows exact location of air leak by movement of 'smoke'

Quick and easy visual identification of air migration pathways

Shows infiltration and exfiltration



Finding the Problem - Infrared Imaging

Pin-points temperature differences in wall, ceiling, floor, etc.

Creates digital image showing cold/hot spots

Heat loss and gain inspection

Locates moisture hidden in walls

Determines settled and missing insulation



Finding the Problem - Blower Door

Determines amount of air leakage

- Pinpoints leakage locations
- Creates negative pressure
- Allows you to observe leaks with air leakage detector



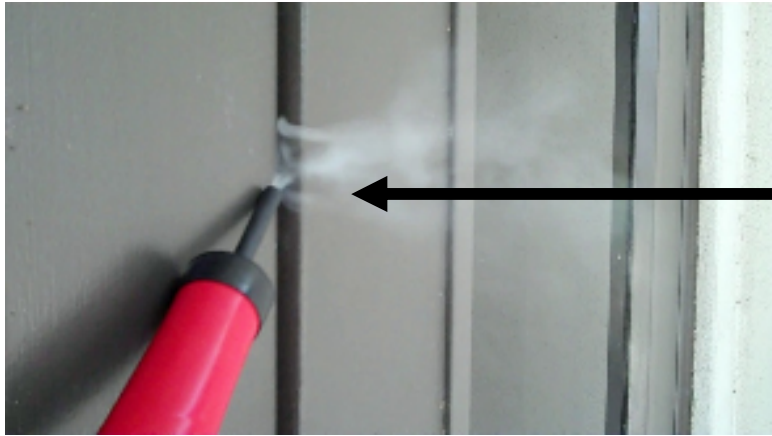
Building Envelope Pictures



The
Smoke
Never
Lies

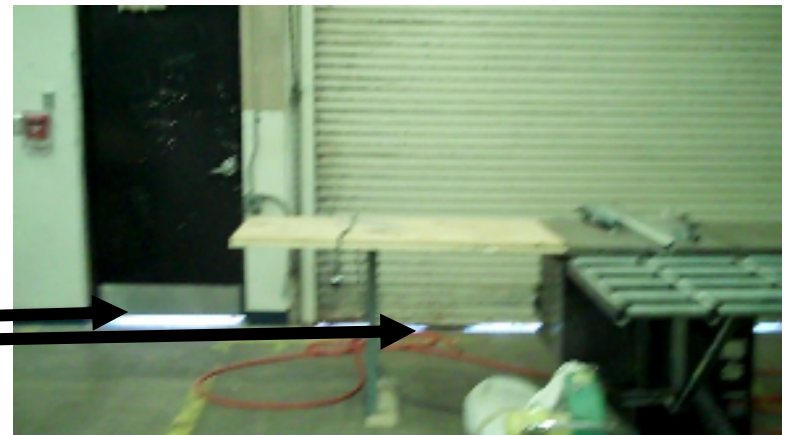


Building Envelope Pictures



Port St. Lucie, Florida –
Conditioned Air Leakage

They wondered, why it
was so hot and humid in
this shop?



Summary

- Building Envelope is vital with a building's Efficiency, Durability, Safety, and Comfort.
- Each element of a building has to work properly for the system to enjoy optimal functionality and performance. If one part of the system fails, it will hinder the other elements' abilities to perform to maximum potential.
- It's critical to bridge research - justifiable costs - with defensible calculations
- Less Intrusions = Greater Efficiency = Job Gets Completed!